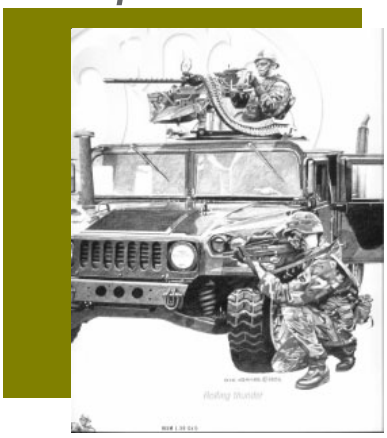
MARINE CORPS
WARFIGHTING LABORATORY

HEAVY MACHINEGUN TECHNOLOGY DEVELOPMENT INITIATIVE

fact sheet



Heavy Machinegun Technology Development Initiative (HMGTDI) is a joint Warfighting Lab/Office of Naval Research (ONR)/Naval Surface Warfare Center (NSWC), Crane initiative to produce an advanced technology demonstrator to support the Improved Heavy Machinegun Universal Needs Statement (UNS) and Solution Initiating Directive. The UNS calls for improved 40mm and .50 caliber heavy machineguns, fire control capable of direct and indirect fire with current inventory optics in the direct fire mode, and an improved gun mount that incorporates both major and minor azimuth and elevation controls into the gunner's grips. This effort is covered by a Technology Transition Agreement between ONR/ MCWL/ and Marine Corps Systems Command (MCSC).

Background: Heavy Machineguns (HMGs) constitute the most responsive fire support asset available to the battalion commander to influence the battle space. Currently, our machinegunners utilize aging weapons that are incurring increasing maintenance burdens and several safety concerns. The gun-mounts use outdated traversing and elevating technology and are not particularly suited to indirect fire missions. There are limited provisions for mounting optics , no hyper elevation capability for using optics on the 40mm gun, and no provisions for true fire control with ranging and ballistic compensation.

Description: HMGTDI is divided into two major developmental components; the Automatic Weapon Fire Control System (AFCS) being developed by ONR and the Advanced Common Mount (ACM) being developed by the Lab. Design and fabrication of both are being done at NSWC Crane. The guns utilized for HMGTDI are commercial off-the-shelf items offering increased reliability and safety versus the current in service HMG's.

- **AFCS** utilizes a laser range finder (LRF), Global Positioning System (GPS), and Inertial Measurement Unit (IMU) in conjunction with a ballistic computer to provide aiming cues to the gunner in direct and indirect fire modes displayed to the gunner via a small display screen. AFCS also provides a squad leader's display for managing the fires of the squad, tracking fire support coordination measures and sending and receiving target location data to and from higher fire support agencies.
- **ACM** will develop a common compatible mount for the M2HB .50 caliber and the GMG 40mm heavy machineguns with hydraulic buffers for recoil attenuation. This research and design effort will include the advanced slewing technology specified in the IHMG UNS. This mount will also be designed to incorporate the mounting interface for the AFCS system. The end result will be a gun mount that is more stable and significantly faster to manipulate than any currently available HMG mount.

Milestones:

- Gen I Work began on the 40mm indirect fire Gen I system in March 2003. The indirect fire capability was demonstrated In January 2004 achieving 2nd round fire for effect on 18 of 20 engagements.
- Gen II The design phase of the Gen II system commenced following the Gen I demonstration. Gen II will bring the direct fire system and .50 caliber capability on line. The first test fire of the Gen II system is slated for September 16th at Yuma Army Proving Ground (YPG). The system validation testing of Gen II is planned for October at YPG.
- Gen III The final developmental generation will produce the Advanced Common Mount and refinements to the AFCS system. Gen III is slated for initial test fire in September of 2005 with final testing and operational evaluation of the system in October 2005.

Benefits:

- HMG capability tailored to USMC stated needs.
- Improved safety
- Increased lethality due to reduced engagement times and increased accuracy. Cost savings for a fire control that offers direct and indirect modes and utilizes current optics vice direct fire only fire control with imbedded optics.
- Achieve full defilade capability with current in service ammo.

Deliverable Products:

- (2) HMGTDI weapon systems with AFCS fire control ACM mounts and modern .50 caliber and 40mm HMG's.
- Test report from the Technical and Operator Testing of the systems.
- Technology Trade Off Study

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